



BHCTP Monthly Discharge Monitoring Report

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Month: August-15
Facility: Central Treatment Plant
Location: Bunker Hill Superfund Site
Contract Number: W912DW-13-C-0026-P00007/P00008

Total Flow For The Month From 006 Outfall: 52,762,100 gallons
Sludge pumping to CIA sludge pond: 1,794,000 gallons

Total Flow From Kellogg Tunnel: 55,316,100 gallons

Percent of Influent Successfully Treated: 100.0%

14 sample days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 84 potential exceedances
84 - 0 exceedances = 84 84/84 = 100%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) sampling for the CTP continued, with four PE samples delivered to SVL for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml trace metal samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip blank and rinsate samples were also taken, with the results being reported on the 'PTM-004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

08-01-15 Performed monthly fire extinguisher inspection. All CTP fire extinguishers are fully charged and in good working condition at this time.

08-01-15 Performed monthly pump and motor inspection. All CTP pumps and motors are in good condition at this time with the exception of the Rapid Mix gear box. Gear box vibration is increasing.

08-03-15 pH set point was increased to 8.5 from 8.3, as the KT flow has decreased from 1450 gpm to approximately 700. pH set point will be increased to 8.5 during extended KT low-flow periods.

08-10-15 Electrician replaced the failed transformer in the Lined Pond pump house.

08-11-15 Chief Operator, USACE COR, Process Engineer and FCI Project Manager attended the monthly process meeting. Process quality, plant operations, contract period reports, OMER projects and operator work schedules were reviewed. pH set point increases during June were discussed. Treated outfall and KT discharge sample analyses were reviewed. The CTP treatment process is producing excellent discharge quality at this time. The pH set point will remain at 8.3. The contract period ending report was discussed and will be completed within the next two weeks.

08-11-15 Performed a no-load emergency generator run test and diagnostics. CTP generator was operated for 30 minutes with no issues or errors.

08-18-15 Performed six-month oil changes on the Rapid Mix Tank and Aerator gear units.

08-18-15 pH set point was increased to 8.5 from 8.3, as the KT flow has decreased from 1450 gpm to approximately 700. pH set point will be increased to 8.5 during extended KT low-flow periods.

08-19-15 Performed annual oil changes on the Clarifier main gear unit and six-month oil changes on the secondary gear units.

08-24-15 Operators responded to two after-hours auto-dialer call out alarms. The pH monitoring system failure alarm was reset and tested. Operators believe the pH probe wire is periodically failing. The second alarm was a lime system alarm. The lime system failure alarm had reset on its own and did not track an alarm indication for the operators. The lime system was tested several times on August 25th with no alarms being activated. Slaker cooling water was increased.

08-25-15 Operators performed the monthly full-load emergency generator run test. The emergency generator operated all CTP components for one hour as programmed, with no issues or errors to report.

08-31-15 04:00 Operators responded to an auto-dialer call out alarm. An electrical outage or surge caused the Aeration Basin pH probe to fail. The failed pH probe caused the lime feed system to continuously inject lime slurry into the process. Increased lime injection increased turbidity in the process. Elevated turbidity will be noticeable for a few days. Two pH probes failed during the power outage. Both were removed from inventory and will be replaced.

08-31-15 Approximately 575 gallons of water was received from Maul Foster and the CDA trust projects. The 575 gallons of water was transferred to the Lined Pond.

During this reporting period:

- The Kellogg Tunnel discharge flow decreased by 10% from August 2014, from 61.4 mg to 55.3 mg.
- The Kellogg Tunnel zinc concentration decreased by 13% from August 2014, from an average of 76 mg/L to 66 mg/L.
- The CTP operating pH set point was increased to 8.5 from 8.3 during extended KT low-flow periods.
- The flocculent dosage remained at approximately 2 ppm.
- The CTP sludge recycle rate remained at 400 gpm.
- CTP operators received three off-shift auto dialer call-out alarms.
- CTP operators performed one short-term pumping event from the Lined Pond.
- CTP operators performed Aeration Basin pH probe and grab sample verification twice per day.
- CTP operators observed no mill discharge in the Kellogg Tunnel flow.**

Lessons Learned

No significant lessons to report for last month.

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2015	8	1	2015	8	31

PARAMETER		Quantity or Loading			Quality or Concentration				FREQUENCY OF ANALYSIS	SAMPLE TYPE
		MONTHLY AVERAGE	DAILY MAXIMUM	UNITS	MINIMUM	MONTHLY AVERAGE	DAILY MAXIMUM	UNITS		
pH	Sample Measurement				7.12		7.39		Continuous	Meter
	Permit Required				6.0		10.0			
Flow Thru Treatment Plant	Sample Measurement	1.70	2.21	mgd						
	Permit Required		Daily							
Lead Total - Pb Effluent	Sample Measurement	0.05	0.08	lbs/day		0.003	0.005	mg/L	three samples/ week	Comp 24
	Permit Required	14.8	37.0			0.30	0.60	mg/L		
Zinc Total - Zn Effluent	Sample Measurement	2.73	3.99	lbs/day		0.19	0.23	mg/L	three samples/ week	Comp 24
	Permit Required	36.2	91.3			0.73	1.48	mg/L		
Cadmium - Cd Effluent	Sample Measurement	0.059	0.082	lbs/day		0.004	0.005	mg/L	three samples/ week	Comp 24
	Permit Required	2.40	6.10			0.050	0.100	mg/L		
Manganese - Mn Effluent	Sample Measurement	275.0	465	lbs/day		19.0	26.5	mg/L	three samples/ week	Comp 24
	No Permit Required					N/A	N/A	mg/L		
Total Suspended Solids - TSS	Sample Measurement	19.8	34	lbs/day		1.4	2.0	mg/L	three samples/ week	Comp 24
	Permit Required	985	1907			20	30	mg/L		

PREPARED BY: GARY FULTON

REVIEWED BY: Mark Reinsel, Ph.D., P.E.

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: Aug-15

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		LOADING kg/day
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day			mgd	mg/L	lbs/day
1											1.94		
2											1.98		
3	0.003	0.04	0.168	2.16	0.005	0.06	20.0	258	7.21	1.54	1.4	18.0	8.18
4											0.86		
5	0.003	0.02	0.157	1.17	0.003	0.02	15.4	114	7.20	0.89	1.4	10.4	4.72
6											0.86		
7	0.003	0.04	0.178	2.39	0.004	0.05	8.07	108	7.25	1.61	1.4	18.8	8.53
8											2.21		
9											2.08		
10	0.005	0.08	0.195	3.20	0.005	0.08	18.5	303	7.23	1.97	1.2	19.7	8.93
11											2.12		
12	0.004	0.06	0.184	3.07	0.003	0.05	22.6	377	7.20	2.00	2.0	33.4	15.14
13											2.00		
14	0.003	0.05	0.184	3.13	0.005	0.08	23.9	407	7.28	2.04	2.0	34.0	15.4
15											2.10		
16											2.06		
17	0.003	0.05	0.190	3.35	0.004	0.08	26.4	465	7.12	2.11	0.8	14.1	6.4
18											2.00		
19	0.005	0.04	0.195	1.62	0.004	0.03	26.5	220	7.15	0.99	0.8	6.6	3.01
20											0.88		
21	0.003	0.05	0.204	3.17	0.004	0.06	16.5	256	7.27	1.86	1.4	21.7	9.86
22											1.52		
23											0.89		
24	0.003	0.02	0.183	1.33	0.004	0.03	11.5	84	7.27	0.87	1.2	8.72	3.96
25											1.85		
26	0.003	0.05	0.233	3.99	0.005	0.08	10.9	186	7.23	2.05	1.2	20.5	9.31
27											2.01		
28	0.003	0.05	0.205	3.51	0.004	0.07	20.2	346	7.26	2.05	1.2	20.5	9.31
29											2.03		
30											1.31		
31	0.003	0.05	0.197	3.43	0.004	0.07	25.9	451	7.39	2.09	1.8	31.3	14.21
Total	0.043	0.61	2.473	35.5	0.05	0.77	246.4	3575	94.1	52.76	17.8	257.9	117.0
Sample Events	13	13	13	13	13	13	13	13	13	31	13	13	13
Daily Average	0.003	0.05	0.19	2.73	0.004	0.06	19.0	275	7.24	1.70	1.4	19.84	9.00
Lab Detection Limit	0.003	0.004		0.001			0.004		0.01		0.800		

MIN 0.003 0.02 0.16 1.17 0.003 0.02 8.07 84 7.12 0.86 0.80 6.63 3.01
MAX 0.005 0.08 0.23 3.99 0.005 0.08 26.50 465 7.39 2.21 2.00 34.05 15.44

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: Aug-15
Data from SVL

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	006 FLOW	TSS		
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		mgd	mg/L	lbs/day	kg/day
1										1.94			
2										1.98			
3	0.960	12.36	83	1,069	0.186	2.39	33	422	2.91	1.54	40	515	234
4										0.86			
5										0.89			
6	0.654	4.70	106	762	0.196	1.41	34	247	2.96	0.86	26	187	85
7										1.61			
8										2.21			
9										2.08			
10	0.522	8.56	50	823	0.086	1.42	82	1,337	3.29	1.97	85	1,394	632
11										2.12			
12										2.00			
13	1.250	20.86	48	793	0.085	1.42	78	1,297	3.41	2.00	98	1,636	742
14										2.04			
15										2.10			
16										2.06			
17	0.569	10.02	46	812	0.080	1.40	77	1,359	3.34	2.11	74	1,303	591
18										2.00			
19										0.99			
20	0.772	5.65	89	648	0.193	1.41	35	255	2.96	0.88	14	102	46
21										1.86			
22										1.52			
23										0.89			
24	0.623	4.53	84	608	0.179	1.30	33	240	2.88	0.87	37	269	122
25										1.85			
26										2.05			
27	0.596	10.00	46	770	0.080	1.34	80	1,344	3.33	2.01	85	1,426	647
28										2.05			
29										2.03			
30										1.31			
31	0.630	10.96	46	792	0.078	1.35	81	1,408	3.43	2.09	78	1,357	616

**PTM Effluent at Lined Storage Pond
CENTRAL TREATMENT PLANT**

Month: Aug-15

DATE	LEAD mg/L	ZINC mg/L	CADMIUM mg/L	pH s.u.	TSS mg/L
08/06/15	0.003	10.8	1.46	6.90	0.6
08/20/15	0.003	10.6	1.40	6.50	0.4

**RINSATE AND TRIP BLANKS
CENTRAL TREATMENT PLANT**

Month: Aug-15

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DATE	SAMPLE	LEAD mg/L	ZINC mg/L	CADMIUM mg/L
Rinsate & Trip Blank					
PTM Discharge at Lined Pond	RB-08-06-15	<0.01	<0.004	<0.002	
Trip Blank (D.I.water)	TB-08-06-15	<0.01	<0.004	<0.002	

CENTRAL TREATMENT PLANT**MISCELLANEOUS FLOWS**

Month : Aug-15

Date	KT Flow Meter Reading
7/31/2015	0
8/31/2015	55,316,100
Total	55,316,100

Date	006 Flow Meter Reading
7/31/2015	0
8/31/2015	52,762,100
Total	52,762,100

Sweeny Pump Station Reading				
Date	#1 Pump	620 gpm	#2 Pump	500 gpm
7/31/2015	170.0	Hours	785.0	Hours
8/31/2015	170.0	Hours	785.0	Hours
Total Hours	0.0	Hours	0.0	Hours
Total Flow for 004/Sweeny For The Month =	0			Gallons

PTM Discharge Flow

Date	Flow (gpm)
08/06/15	6.0
08/20/15	6.0

Date	Lined Storage Pond Water Level		
7/31/2015	1,500,000	gal	Elev. = 2270.0
8/31/2015	2,250,000	gal	Elev. = 2271.0

Bunker Hill Central Treatment Plant																																
Daily log August 2015																																
DATE	OP	AERATION BASIN						CLARIFIER						DISCHARGE 006						RECYCLE SG			LIME SLURRY			SLUDGE PUMP		POND PUMP		SLUDGE GUN TEST		LINED POND
		GPM	pH	SET	pH1	grab	pH1	grab	pH2	grab	TURB	TEMP	pH3	grab	pH3	grab	TURB	FLOW	SG	GPM	SG	%solid	Closed/Open	pump #	min	ON	OFF	10' Out	20' Out	ESTIMATED Elevation (m)		
8/1	GC				8.3	8.3	8.3	8.4	8.4	7.9	8.0	1.10	63	7.1	7.2	7.4	7.3	0.96	1.94	1.037	400	1.066	10.2	183/25	3	120			2270.0 (1.5mg)			
8/2	SB				8.3	8.3	8.3	8.4	8.4	8.0	8.0	1.16	62	7.1	7.2	7.5	7.3	1.05	1.98	1.040	400	1.066	10.2	190/25	3	120			2270.0			
8/3	GF, SB	650	2.80	8.5	8.6	8.7	8.4	8.4	7.8	7.9	7.9	0.90	61	7.0	7.0	7.2	7.2	0.85	1.54	1.036	400	1.065	10.1	375/25	3	70			12" 10" 2270.0			
8/4	GF, SB			8.5	8.5	8.5	8.5	8.5	7.9	8.0	8.1	7.9	0.95	63	6.8	7.0	7.3	7.2	0.88	0.86	1.030	400	1.066	10.2	322/20	3	30			2270.0		
8/5	GF, SB			8.5	8.5	8.5	8.4	8.5	7.8	8.0	8.1	7.9	0.98	62	7.2	7.2	7.3	7.3	0.80	0.89	1.036	400	1.066	10.2	335/20	3	50			2270.5 (1.75mg)		
8/6	GF, SB	625	2.93	8.5	8.5	8.5	8.6	8.6	7.9	8.0	8.0	8.0	0.90	61	7.1	7.1	7.3	7.2	0.80	0.86	1.037	400	1.065	10.1	327/20	3	60			2270.5		
8/7	GF			8.3	8.4	8.4	8.3	8.3	8.1	7.9	8.1	8.0	0.70	58	7.2	7.2	7.2	7.1	0.70	1.61	1.043	400	1.066	10.2	191/25	3	120			2270.5		
8/8	GC			8.3	8.3	8.4	8.3	8.3	7.9	7.9	8.2	8.0	0.81	60	7.1	7.1	7.3	7.2	0.72	2.21	1.041	400	1.065	10.1	187/25	3	120			2270.5		
8/9	SB			8.3	8.4	8.4	8.3	8.3	7.9	8.0	7.9	8.0	0.87	61	7.1	7.2	7.5	7.4	0.80	2.08	1.038	400	1.064	10.0	188/25	3	120			2270.5		
8/10	GF, SB	1444	3.08	8.3	8.3	8.3	8.3	8.3	7.9	7.9	8.1	8.0	0.90	62	7.1	7.2	7.3	7.2	0.80	1.97	1.037	400	1.065	10.1	192/25	3	90			2270.5		
8/11	GF, SB, GC			8.3	8.3	8.2	8.3	8.3	7.9	7.7	8.0	7.7	1.16	62	7.1	7.2	7.5	7.3	0.98	2.12	1.040	400	1.063	9.8	182/25	3	120			2270.5		
8/12	GF, SB, GC			8.3	8.3	8.3	8.3	8.3	7.9	8.0	8.0	8.0	0.99	60	7.1	7.3	7.5	7.4	0.69	2.00	1.039	400	1.066	10.2	188/25	3	120			2270.5		
8/13	GF, SB, GC	1444	3.27	8.3	8.3	8.3	8.4	8.4	7.9	7.9	8.0	7.8	1.20	61	7.1	7.1	7.5	7.3	0.90	2.00	1.040	400	1.064	10.0	189/25	3	120			2270.5		
8/14	GF, GC			8.3	8.3	8.3	8.3	8.3	8.0	7.8	8.1	8.0	0.99	63	7.2	7.2	7.2	7.2	1.05	2.04	1.040	400	1.062	9.7	193/25	3	120			2270.0 (1.5mg)		
8/15	GC			8.3	8.3	8.3	8.4	8.4	7.8	7.7	7.9	7.7	0.98	62	7.2	7.2	7.4	7.2	0.97	2.10	1.038	400	1.063	9.8	190/25	3	90			2270.0		
8/16	SB			8.3	8.3	8.4	8.3	8.3	8.1	8.0	8.2	8.0	1.32	60	7.4	7.2	7.5	7.3	1.20	2.06	1.039	400	1.063	9.8	194/25	3	120			2270.0		
8/17	GF, SB	1480	3.30	8.3	8.3	8.4	8.3	8.2	8.1	7.9	8.2	8.0	1.45	60	7.3	7.2	7.6	7.3	1.20	2.11	1.038	400	1.064	10.0	187/25	3	120			2270.0		
8/18	GF, SB, GC			8.3	8.3	8.3	8.4	8.3	8.2	8.0	8.1	8.0	1.46	60	7.5	7.3	7.2	7.2	1.34	2.00	1.039	400	1.063	9.8	195/25	3	120			2270.0		
8/19	GF, SB, GC			8.5	8.6	8.5	8.5	8.5	8.1	8.0	8.2	8.0	1.38	61	7.4	7.4	7.3	7.4	1.22	0.99	1.025	400	1.062	9.7	300/20	3	0			2270.0		
8/20	GF, SB, GC	585	2.91	8.5	8.5	8.6	8.3	8.2	7.9	8.1	8.3	8.1	1.28	59	6.9	7.3	7.5	7.4	1.21	0.88	1.036	400	1.062	9.7	296/20	3	60			2270.0		
8/21	GF			8.3	8.3	8.3	8.3	8.3	8.0	8.0	8.1	8.0	1.05	60	7.2	7.2	7.2	7.2	0.90	1.86	1.047	400	1.063	9.8	200/25	3	150			2270.0		
8/22	SB, GC			8.3	8.5	8.5	8.7	8.7	8.2	8.1	8.2	8.1	1.09	57	7.3	7.2	7.3	7.3	1.00	1.52	1.029	400	1.062	9.7	375/25	3	30			2270.0		
8/23	SB			8.5	8.5	8.5	8.5	8.6	8.1	8.2	8.2	8.2	0.96	58	7.1	7.2	7.3	7.2	0.88	0.89	1.031	400	1.064	10.0	296/15	3	60			2270.0		
8/24	GF	680	2.90	8.5	8.5	8.5	8.5	8.3	8.0	8.0	8.1	8.0	0.85	58	7.1	7.1	7.1	7.2	0.80	0.87	1.030	400	1.063	9.8	270/15	3	90			2270.0		
8/25	GF, GC			8.3	8.4	8.3	8.4	8.4	8.0	8.0	8.2	8.0	0.72	60	7.2	7.4	7.5	7.4	0.83	1.85	1.041	400	1.063	9.8	204/25	3	120			2270.0		
8/26	GF, GC			8.3	8.4	8.3	8.5	8.5	8.0	8.1	8.2	8.2	0.90	60	7.2	8.1	7.4	8.1	0.68	2.05	1.041	400	1.073	11.3	201/25	3	135			2270.0		
8/27	GF, GC	1514	3.28	8.3	8.3	8.3	8.3	8.2	8.0	7.8	8.0	7.9	0.81	60	7.2	7.3	7.2	7.3	0.80	2.01	1.038	400	1.065	10.1	225/25	3	95			2270.0		
8/28	GC			8.3	8.3	8.2	8.3	8.3	8.0	7.9	7.9	7.6	1.06	60	7.1	7.4	7.1	7.3	0.80	2.05	1.041	400	1.064	10.0	222/25	3	120			2270.0		
8/29	GC			8.3	8.3	8.3	8.4	8.4	7.9	7.9	8.0	7.9	1.22	60	7.0	7.9	7.1	7.3	1.11	2.03	1.042	400	1.065	10.1	186/25	3	120			2270.0		
8/30	SB			8.3	9.0	9.0	8.5	8.5	8.4	8.2	8.7	8.6	1.39	59	7.0	7.1	7.4	7.3	1.13	1.31	1.035	400	1.065	10.1	300/25	3	60	7:35	8:35	2271.0 (2.25mg)		
8/31	GF, SB	1465	3.29	8.3	8.4	8.4		8.3	8.2		3.20	69	7.5	7.4				3.00	2.09	1.041	400	1.065	10.1	225/25	3	120			2271.0			
Averages:				8.35	8.39	8.40	8.38	8.37	7.99	7.96	8.10	7.97	1.12		7.15	7.26	7.33	7.30	1.00	52.8	1.038					96						
Notes:																									2990							
1,794,000 Gallons																																
08-02-15 21:00 KT flow decreased from 1400 gpm to 680 gpm.																																
08-06-15 13:00 KT flow increased from 625 gpm to 1400 gpm.																																
08-18-15 10:00 KT flow decreased from 1480 gpm to 680 gpm.																																
08-20-15 09:30 KT flow increased from 585 gpm to 1480 gpm.																																
08-21-15 18:00 KT flow decreased from 1480 gpm to 680 gpm.																																
08-24-15 10:00 KT flow increased from 680 gpm to 1480 gpm.																																
08-28-15 06:30 Recalibrated Aeration Basin pH probe.</																																

KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2000-2009										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jan.	61,000,000	61,677,510	54,606,100	53,066,890	52,223,080	53,150,000	56,050,900	56,281,000	53,465,820	50,936,960
Feb.	57,600,000	45,584,000	52,840,000	46,493,470	48,306,920	49,860,000	51,188,000	50,511,300	49,282,209	48,146,111
March	60,730,000	57,740,360	50,452,060	60,162,290	59,852,720	58,073,000	56,332,830	65,443,650	54,578,130	61,712,540
April	68,680,000	54,846,000	65,583,230	63,335,350	50,715,310	53,775,350	72,039,280	66,636,500	61,690,530	63,055,350
May	97,719,900	57,501,901	76,082,410	63,335,350	53,245,000	54,181,650	72,027,000	63,203,308	86,680,760	70,233,580
June	69,800,000	55,835,590	67,299,960	59,532,434	50,451,170	51,750,000	68,385,600	57,981,410	82,622,590	64,623,180
July	63,698,850	53,652,330	64,820,120	66,252,746	56,538,980	55,255,000	64,054,000	58,282,900	66,324,500	61,535,000
Aug.	66,707,120	45,289,000	58,212,940	62,074,750	52,002,140	49,970,000	64,621,000	55,335,900	65,168,620	56,446,670
Sept.	55,797,530	50,276,020	60,140,460	43,789,000	49,208,020	49,987,000	54,515,270	50,471,870	61,074,020	57,006,430
Oct.	60,424,720	50,660,840	54,485,871	52,869,290	59,601,690	52,807,000	57,610,030	50,086,330	58,666,300	55,830,000
Nov.	53,408,660	50,660,840	51,072,259	47,600,000	51,948,000	50,722,600	55,191,700	50,779,040	52,041,780	54,956,800
Dec.	56,414,870	53,464,780	56,034,000	56,413,080	56,770,000	54,904,400	60,486,900	53,716,210	55,727,260	54,542,700
Totals	771,981,650	637,189,171	711,629,410	674,924,650	640,863,030	634,436,000	732,502,510	678,729,418	747,322,519	699,025,321

KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2010-2019										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Jan.	55,503,180	61,797,170	58,434,610	61,855,400	57,478,450	58,440,540				
Feb.	50,819,910	54,556,227	57,763,170	59,383,290	54,607,950	59,767,470				
March	54,691,420	61,373,630	67,236,650	66,264,780	65,396,350	64,468,230				
April	56,255,340	65,687,340	81,233,630	69,619,100	65,618,770	63,056,840				
May	58,825,640	84,365,390	86,826,340	71,496,380	80,598,590	61,898,200				
June	56,770,200	79,985,540	83,440,990	64,663,900	65,623,330	56,368,540				
July	56,727,510	79,346,330	74,315,690	62,844,790	63,425,030	55,655,000				
Aug.	56,239,370	70,377,570	68,986,900	58,459,380	61,486,270	55,316,100				
Sept.	54,109,980	60,404,280	62,270,300	58,097,500	56,279,590					
Oct.	55,480,200	62,403,480	59,991,850	58,325,780	60,659,850					
Nov.	54,856,880	58,430,700	57,184,220	56,215,000	55,065,100					
Dec.	54,607,330	58,617,700	61,750,390	56,932,530	59,770,540					
Totals	664,886,960	797,345,357	819,434,740	744,157,830	746,009,820	474,970,920	0	0	0	0

Yellow indicates record monthly flow as well as record annual flow

KELLOGG TUNNEL ZINC DATA

Month	Concentration (mg/L)											
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jan.		86	81	79	63	70	61	72	57	68	41	46
Feb.		86	91	96	55	72	57	95	58	68	41	68
March		94	116	86	65	68	53	86	58	69	58	81
April		98	121	140	85	80	50	137	176	86	107	92
May		105	231	179	318	136	57	377	215	150	177	87
June		107	182	118	271	143	68	347	164	106	131	78
July		90	144	111	198	117	75	181	136	87	87	75
Aug.		87	112	92	132	94	79	130	110	86	76	66
Sept.		84	107	80	107	76	81	132	107	75	66	
Oct.		59	81	100	88	99	75	70	86	70	67	63
Nov.		66	79	88	88	104	63	57	95	71	70	55
Dec.		67	62	78	65	76	59	61	88	69	54	49
average	64	88	121	102	131	88	64	152	108	82	79	74
lime usage (tons/day)	2.59	3.23	2.76	4.78	3.24	2.16	4.31	3.93	2.46	2.70		
Zinc Conc. Increase/Decrease	37%	-16%	29%	-33%	-27%	138%	-29%	-24%	-4%	-6%		
Lime Usage Increase/Decrease	25%	-15%	73%	-32%	-33%	100%	-9%	-37%	10%	-100%		

Bunker Hill Superfund Site							
Kellogg, Idaho							
Central Treatment Plant Review							
Month: Aug-15							
SAMPLE	DATE	PARAMETER	VALUE	QC/dup	UNITS	PRECISION	MATRIX SPIKE DATA
LOCATION			RESULTS			% RPD	% RECOVERY
006/CTP Outfall	08/03/15	Cadmium	0.005	0.004	mg/L	4.4%	95%
		Lead	0.003	0.003	mg/L	0.0%	88%
Lab Duplicate		Manganese	20.0	20.4	mg/L	-2.0%	
		Zinc	0.168	0.169	mg/L	-0.6%	85%
		pH	7.21	7.18	s.u.	0.4%	
		TSS	1.4	1.4	mg/L	0.0%	
Kellogg Tunnel	08/03/15	Cadmium	0.186	0.185	mg/L	0.5%	94%
		Lead	0.960	0.956	mg/L	0.4%	91%
Lab Duplicate		Manganese	32.8	32.8	mg/L	0.0%	
		Zinc	83.0	82.8	mg/L	0.2%	
		pH			s.u.		
		TSS			mg/L		
006/CTP Outfall	08/05/15	Cadmium	0.003	0.003	mg/L	3.2%	95%
		Lead	0.003	0.003	mg/L	0.0%	88%
Lab Duplicate		Manganese	15.4	15.6	mg/L	-1.3%	
		Zinc	0.157	0.158	mg/L	-0.6%	89%
		pH	7.20	7.20	s.u.	0.0%	
		TSS	1.4	1.4	mg/L	0.0%	
Performance Evaluation Sample (CTPXX-08-06-15)	08/06/15	Cadmium	0.052	0.050	mg/L	4.5%	
		Lead	0.306	0.300	mg/L	2.0%	
		Zinc	0.814	0.730	mg/L	10.9%	
TB Lab Duplicate (TB-08-06-15)	08/06/15	Cadmium	0.001	0.001	mg/L	0.0%	93%
		Lead	0.003	0.003	mg/L	0.0%	92%
		Manganese	0.002	0.002	mg/L	0.0%	94%
		Zinc	0.004	0.004	mg/L	0.0%	89%
PTM Discharge	08/06/15	Cadmium	1.46	1.47	mg/L	-0.7%	
		Lead	0.003	0.003	mg/L	0.0%	
QC Sample		Manganese	0.735	0.744	mg/L	-1.2%	
		Zinc	10.8	10.9	mg/L	-0.9%	
		pH	6.90	6.91	s.u.	-0.1%	
		TSS	0.6	0.6	mg/L	0.0%	
006/CTP Outfall	08/07/15	Cadmium	0.004	0.003	mg/L	9.0%	97%
		Lead	0.003	0.003	mg/L	0.0%	90%
Lab Duplicate		Manganese	8.07	7.91	mg/L	2.0%	
		Zinc	0.178	0.177	mg/L	0.6%	86%
		pH	7.25	7.21	s.u.	0.6%	
		TSS	1.4	1.4	mg/L	0.0%	
006/CTP Outfall	08/10/15	Cadmium	0.005	0.005	mg/L	-2.0%	101%
		Lead	0.003	0.003	mg/L	0.0%	94%
Lab Duplicate		Manganese	18.5	18.5	mg/L	0.0%	
		Zinc	0.195	0.196	mg/L	-0.5%	92%
		pH	7.23	7.20	s.u.	0.4%	
		TSS	1.2	1.2	mg/L	0.0%	
Kellogg Tunnel	08/10/15	Cadmium	0.086	0.085	mg/L	1.2%	101%

SAMPLE	DATE	PARAMETER	VALUE	QC/dup	UNITS	PRECISION	MATRIX SPIKE DATA
LOCATION			RESULTS			% RPD	% RECOVERY
Lab Duplicate		Lead	0.522	0.514	mg/L	1.5%	95%
		Manganese	81.5	81.1	mg/L	0.5%	
		Zinc	50.2	49.2	mg/L	2.0%	
		pH			s.u.		
		TSS			mg/L		
006/CTP Outfall	08/12/15	Cadmium	0.004	0.004	mg/L	-2.7%	97%
		Lead	0.003	0.003	mg/L	0.0%	91%
		Manganese	22.6	22.8	mg/L	-0.9%	
		Zinc	0.184	0.182	mg/L	1.1%	91%
		pH	7.20	7.18	s.u.	0.3%	
		TSS	2.0	2.2	mg/L	-9.5%	
Performance Evaluation Sample	08/13/15	Cadmium	0.053	0.050	mg/L	5.3%	
(CTPXX-08-13-15)	08/13/15	Lead	0.312	0.300	mg/L	3.9%	
		Manganese	0.002	0.002	mg/L	0.0%	
		Zinc	0.813	0.830	mg/L	-2.1%	86%
		pH	7.28	7.24	s.u.	0.6%	
		TSS	2.0	2.0	mg/L	0.0%	
PE Lab Duplicate	08/13/15	Cadmium	0.053	0.054	mg/L	-2.6%	90%
		Lead	0.312	0.322	mg/L	-3.2%	88%
		Manganese	0.002	0.002	mg/L	0.0%	92%
		Zinc	0.813	0.830	mg/L	-2.1%	
		pH	7.28	7.24	s.u.	0.6%	
		TSS	2.0	2.0	mg/L	0.0%	
006/CTP Outfall	08/14/15	Cadmium	0.005	0.005	mg/L	-6.1%	92%
		Lead	0.003	0.003	mg/L	0.0%	85%
		Manganese	23.9	24.4	mg/L	-2.1%	
		Zinc	0.184	0.187	mg/L	-1.6%	84%
		pH	7.28	7.24	s.u.	0.6%	
		TSS	2.0	2.0	mg/L	0.0%	
006/CTP Outfall	08/14/15	Cadmium	0.005	0.005	mg/L	-4.1%	
		Lead	0.003	0.003	mg/L	0.0%	
		Manganese	23.9	23.9	mg/L	0.0%	
		Zinc	0.184	0.181	mg/L	1.6%	
		pH	7.28	7.30	s.u.	-0.3%	
		TSS	2.0	1.4	mg/L	35.3%	
Kellogg Tunnel	08/17/15	Cadmium	0.080	0.079	mg/L	1.0%	98%
		Lead	0.569	0.569	mg/L	0.0%	92%
		Manganese	77.2	77.5	mg/L	-0.4%	
		Zinc	46.1	45.9	mg/L	0.4%	93%
		pH			s.u.		
		TSS			mg/L		
006/CTP Outfall	08/19/15	Cadmium	0.004	0.004	mg/L	0.0%	95%
		Lead	0.005	0.003	mg/L	40.0%	88%
		Manganese	26.5	26.0	mg/L	1.9%	
		Zinc	0.195	0.192	mg/L	1.6%	90%
		pH	7.15	7.22	s.u.	-1.0%	
		TSS	0.8	1.0	mg/L	-22.2%	
Performance Evaluation Sample	08/20/15	Cadmium	0.053	0.050	mg/L	5.1%	
(CTPXX-08-20-15)		Lead	0.318	0.300	mg/L	5.8%	
		Zinc	0.821	0.730	mg/L	11.7%	
		pH			s.u.		
		TSS			mg/L		
		PE Lab Duplicate	0.053	0.052	mg/L	1.0%	92%
		Lead	0.318	0.315	mg/L	0.9%	91%
		Manganese	0.002	0.002	mg/L	0.0%	94%

SAMPLE	DATE	PARAMETER	VALUE	QC/dup	UNITS	PRECISION	MATRIX SPIKE DATA
LOCATION			RESULTS			% RPD	% RECOVERY
(CTPXX-08-20-15)		Zinc	0.821	0.816	mg/L	0.6%	87%
006/CTP Outfall	08/21/15	Cadmium	0.004	0.004	mg/L	2.5%	96%
		Lead	0.003	0.003	mg/L	0.0%	90%
Lab Duplicate		Manganese	16.5	16.5	mg/L	0.0%	97%
		Zinc	0.204	0.201	mg/L	1.5%	87%
		pH	7.27	7.25	s.u.	0.3%	
		TSS	1.4	1.4	mg/L	0.0%	
006/CTP Outfall	08/24/15	Cadmium	0.004	0.004	mg/L	-5.0%	98%
		Lead	0.003	0.003	mg/L	0.0%	91%
Lab Duplicate		Manganese	11.5	11.6	mg/L	-0.9%	95%
		Zinc	0.183	0.182	mg/L	0.5%	90%
		pH	7.27	7.25	s.u.	0.3%	
		TSS	1.2	1.2	mg/L	0.0%	
Kellogg Tunnel	08/24/15	Cadmium	0.179	0.169	mg/L	5.7%	96%
		Lead	0.623	0.585	mg/L	6.3%	92%
Lab Duplicate		Manganese	33.0	32.5	mg/L	1.5%	
		Zinc	83.6	80.4	mg/L	3.9%	
		pH			s.u.		
		TSS			mg/L		
006/CTP Outfall	08/26/15	Cadmium	0.005	0.005	mg/L	6.5%	100%
		Lead	0.003	0.003	mg/L	0.0%	94%
Lab Duplicate		Manganese	10.9	11.0	mg/L	-0.9%	100%
		Zinc	0.233	0.235	mg/L	-0.9%	91%
		pH	7.23	7.22	s.u.	0.1%	
		TSS	1.2	1.2	mg/L	0.0%	
Kellogg Tunnel	08/27/15	Cadmium	0.080	0.079	mg/L	0.9%	
		Lead	0.596	0.592	mg/L	0.7%	
QC Sample		Manganese	80.1	79.7	mg/L	0.5%	
		Zinc	45.9	45.5	mg/L	0.9%	
		pH	3.33	3.31	s.u.	0.6%	
		TSS	85.0	83.0	mg/L	2.4%	
Performance Evaluation Sample	08/27/15	Cadmium	0.052	0.050	mg/L	4.7%	
		Lead	0.321	0.300	mg/L	6.8%	
		Zinc	0.787	0.730	mg/L	7.5%	
(CTPXX-08-27-15)							
PE Lab Duplicate	08/27/15	Cadmium	0.052	0.053	mg/L	-0.4%	98%
		Lead	0.321	0.323	mg/L	-0.6%	96%
		Manganese	0.002	0.002	mg/L	0.0%	100%
		Zinc	0.787	0.795	mg/L	-1.0%	92%
006/CTP Outfall	08/28/15	Cadmium	0.004	0.004	mg/L	5.0%	100%
		Lead	0.003	0.003	mg/L	0.0%	92%
Lab Duplicate		Manganese	20.2	20.6	mg/L	-2.0%	
		Zinc	0.205	0.206	mg/L	-0.5%	91%
		pH	7.26	7.26	s.u.	0.0%	
		TSS	1.2	1.2	mg/L	0.0%	
006/CTP Outfall	08/31/15	Cadmium	0.004	0.004	mg/L	4.9%	102%
		Lead	0.003	0.003	mg/L	0.0%	94%
Lab Duplicate		Manganese	25.9	25.7	mg/L	0.8%	
		Zinc	0.197	0.194	mg/L	1.5%	95%
		pH	7.39	7.35	s.u.	0.5%	

		Bunker Hill Superfund Site					
		Kellogg, Idaho					
		Central Treatment Plant Review					
		Month: Aug-15					
CONCENTRATION (mg/L)							
SAMPLE	DATE	PARAMETER	SPIKE	DUPLICATE	SPIKE	PRECISION	
LOCATION			ADDED	RESULT	RESULT	% RPD	COMMENTS
006/CTP Outfall	08/03/15	Cadmium	1.00	0.959	0.953	0.6%	
MS/MSD		Lead	1.00	0.883	0.878	0.6%	
		Manganese	1.00	20.7	20.6	0.9%	Sample conc. >> spike level
		Zinc	1.00	1.02	1.01	0.9%	
Kellogg Tunnel	08/03/15	Cadmium	1.00	1.12	1.13	0.4%	
MS/MSD		Lead	1.00	1.85	1.86	1.0%	
		Manganese	1.00	33.3	33.0	0.7%	Sample conc. >> spike level
		Zinc	1.00	82.7	83.0	0.4%	
006/CTP Outfall	08/05/15	Cadmium	1.00	0.946	0.952	0.6%	
MS/MSD		Lead	1.00	0.875	0.879	0.5%	
		Manganese	1.00	16.0	16.2	0.7%	Sample conc. >> spike level
		Zinc	1.00	1.04	1.05	0.7%	
TB Sample	08/06/15	Cadmium	1.00	0.936	0.933	0.3%	
MS/MSD		Lead	1.00	0.927	0.922	0.5%	
		Manganese	1.00	0.935	0.936	0.1%	Sample conc. >> spike level
		Zinc	1.00	0.898	0.894	0.4%	
006/CTP Outfall	08/07/15	Cadmium	1.00	0.989	0.973	1.6%	
MS/MSD		Lead	1.00	0.914	0.897	1.9%	
		Manganese	1.00	8.89	8.84	0.6%	Sample conc. >> spike level
		Zinc	1.00	1.06	1.04	2.2%	
006/CTP Outfall	08/10/15	Cadmium	1.00	1.02	1.02	0.5%	
MS/MSD		Lead	1.00	0.956	0.944	1.2%	
		Manganese	1.00	19.7	19.2	2.4%	Sample conc. >> spike level
		Zinc	1.00	1.14	1.12	1.9%	
Kellogg Tunnel	08/10/15	Cadmium	1.00	1.10	1.10	0.2%	
MS/MSD		Lead	1.00	1.47	1.47	0.0%	
		Manganese	1.00	82.4	82.2	0.3%	Sample conc. >> spike level
		Zinc	1.00	51.3	50.6	1.4%	
006/CTP Outfall	08/12/15	Cadmium	1.00	0.989	0.975	1.4%	
MS/MSD		Lead	1.00	0.906	0.905	0.2%	
		Manganese	1.00	23.7	23.9	0.7%	Sample conc. >> spike level
		Zinc	1.00	1.10	1.10	0.3%	
PE Sample	08/13/15	Cadmium	1.00	0.953	0.949	0.4%	
MS/MSD		Lead	1.00	1.20	1.20	0.1%	
		Manganese	1.00	0.916	0.916	0.0%	Sample conc. >> spike level
		Zinc	1.00	1.67	1.68	0.4%	
006/CTP Outfall	08/17/15	Cadmium	1.00	0.976	0.965	1.2%	
MS/MSD		Lead	1.00	0.901	0.881	2.2%	
		Manganese	1.00	28.0	27.6	1.6%	Sample conc. >> spike level
		Zinc	1.00	1.07	1.05	1.6%	
Kellogg Tunnel	08/17/15	Cadmium	1.00	1.03	1.05	2.1%	
MS/MSD		Lead	1.00	1.45	1.48	2.1%	
		Manganese	1.00	77.3	79.3	2.5%	Sample conc. >> spike level
		Zinc	1.00	46.2	47.0	1.9%	
006/CTP Outfall	08/19/15	Cadmium	1.00	0.964	0.954	1.1%	
MS/MSD		Lead	1.00	0.893	0.887	0.7%	

		Manganese	1.00	27.0	27.0	0.1%	Sample conc. >> spike level	
		Zinc	1.00	1.09	1.09	0.0%		
PE Sample	08/20/15	Cadmium	1.00	0.972	0.971	0.1%		
MS/MSD		Lead	1.00	1.22	1.22	0.6%		
CTPXX-08-20-15		Manganese	1.00	0.946	0.939	0.7%	Sample conc. >> spike level	
		Zinc	1.00	1.69	1.69	0.2%		
006/CTP Outfall	08/21/15	Cadmium	1.00	0.963	0.965	0.2%		
MS/MSD		Lead	1.00	0.895	0.896	0.0%		
		Manganese	1.00	17.5	17.5	0.2%	Sample conc. >> spike level	
		Zinc	1.00	1.07	1.07	0.1%		
006/CTP Outfall	08/24/15	Cadmium	1.00	0.982	0.983	0.1%		
MS/MSD		Lead	1.00	0.916	0.914	0.2%		
		Manganese	1.00	12.5	12.4	0.3%	Sample conc. >> spike level	
		Zinc	1.00	1.09	1.09	0.4%		
Kellogg Tunnel	08/24/15	Cadmium	1.00	1.13	1.10	0.2%		
MS/MSD		Lead	1.00	1.54	1.54	0.1%		
		Manganese	1.00	33.6	33.6	0.2%	Sample conc. >> spike level	
		Zinc	1.00	83.3	83.5	0.2%		
006/CTP Outfall	08/26/15	Cadmium	1.00	1.01	1.01	0.1%		
MS/MSD		Lead	1.00	0.930	0.938	0.8%		
		Manganese	1.00	11.9	11.9	0.1%	Sample conc. >> spike level	
		Zinc	1.00	1.14	1.14	0.3%		
PE Sample	08/27/15	Cadmium	1.00	1.02	1.03	0.8%		
MS/MSD		Lead	1.00	1.26	1.28	1.0%		
CTPXX-08-27-15		Manganese	1.00	1.01	1.00	0.9%	Sample conc. >> spike level	
		Zinc	1.00	1.71	1.71	0.2%		
006/CTP Outfall	08/28/15	Cadmium	1.00	0.996	1.000	0.6%		
MS/MSD		Lead	1.00	0.912	0.922	1.0%		
		Manganese	1.00	21.5	21.8	1.2%	Sample conc. >> spike level	
		Zinc	1.00	1.10	1.12	1.7%		
006/CTP Outfall	08/31/15	Cadmium	1.00	1.02	1.03	0.2%		
MS/MSD		Lead	1.00	0.938	0.940	0.1%		
		Manganese	1.00	26.4	26.4	0.1%	Sample conc. >> spike level	
		Zinc	1.00	1.14	1.15	0.3%		

USACE PRIME CONTRACTOR Monthly Record of Work-Related Injuries/Illnesses & Exposure

U.S. Army Corps of Engineers
WVSPB - August 2013

Month August 2015

Employees will be provided with the services of a DDC, if you file a claim for disability, it will provide you with a DDC to help you with your disability claim. If you are unable to work due to a disability, you may be entitled to receive a disability benefit. If you are unable to work due to a disability, you may be entitled to receive a disability benefit.

No accidents reported

Expenditure Hours	Month: <u>Sept</u> Year To Date: <u>2000 hours</u>	Name of Program/Skill Training Received: <u>The Bachelor Registration</u>	Total: <u>1</u> Certified by Recipient: <u>John Doe</u>
		Date: <u>9/11/05</u>	

Dante:

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: August 6, 2015

Inspected By:

Gary Fulton, Steve Brunner

Item Inspected	Condition	Comments	
Channel Sections and Joints	Good / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	Good / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	Good / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	Good / Poor		Ok
Bottom Joints (during low flows)	Good / Poor		Ok
Trash Rack Assembly Rail Units	Good / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	Good / Poor	Removed debris from trash racks	
Parshall Flume	Good / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has no pumps running at this time.

The Kellogg Tunnel flow at this time is 0.90 mgd (625 gpm), pH at this time is 2.93

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

Operators observed no mill discharge in the flume/trash rack area at this time.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: August 13, 2015

Inspected By:

Gary Coast, Steve Brunner

Item Inspected	Condition	Comments
Channel Sections and Joints	Good / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	Good / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	Good / Poor	Check for cracks Ok
Channel Bottom (during low flows)	Good / Poor	Ok
Bottom Joints (during low flows)	Good / Poor	Ok
Trash Rack Assembly Rail Units	Good / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	Good / Poor	Removed debris from trash racks
Parshall Flume	Good / Poor	Check fiberglass and joint connections Ok

General Comments:

Bunker mine has one pump running at this time.

The Kellogg Tunnel flow at this time is 2.08 mgd (1440 gpm), pH at this time is 3.27.

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

Operators observed no mill discharge in the flume/trash rack area at this time.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: August 20, 2015

Inspected By:

Steve Brunner, Gary Coast

Item Inspected	Condition	Comments	
Channel Sections and Joints	Good / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	Good / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	Good / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	Good / Poor		Ok
Bottom Joints (during low flows)	Good / Poor		Ok
Trash Rack Assembly Rail Units	Good / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	Good / Poor	Removed debris from trash racks	
Parshall Flume	Good / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has no pump running at this time.

The Kellogg Tunnel flow at this time is 0.84 mgd (585 gpm), pH at this time is 2.91

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

Operators observed no mill discharge in the flume/trash rack area at this time.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: August 27, 2015

Inspected By:

Gary Coast, Gary Fulton

Item Inspected	Condition	Comments	
Channel Sections and Joints	Good / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	Good / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	Good / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	Good / Poor		Ok
Bottom Joints (during low flows)	Good / Poor		Ok
Trash Rack Assembly Rail Units	Good / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	Good / Poor	Removed debris from trash racks	
Parshall Flume	Good / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has one pump running at this time.

The Kellogg Tunnel flow at this time is 2.18 mgd (1514 gpm), pH at this time is 3.28.

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

Operators removed several pieces of wood debris from the upper trash rack.

Operators observed no mill discharge in the flume/trash rack area at this time.



One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0

Ferguson Contracting
901 N. Division
Pinehurst, ID 83850

Project: BHCTP

Sampled: 03-Aug-15

Received: 03-Aug-15

Reported: 04-Aug-15 12:56

LAB #	WSI0001-01	-	-	-	-	-	-
SAMPLE ID	006-06-03-15	-	-	-	-	-	-
Reporting Limit	08/03/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0046 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	20.0 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.188	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.21 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.4	-	-	-	-	-

John Kern
Laboratory Director

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One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0

Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 03-Aug-15
		Received: 03-Aug-15
		Reported: 04-Aug-15 12:58

LAB #	WSI0002-01	-	-	-	-	-	-
SAMPLE ID	KT-08-03-15	-	-	-	-	-	-
Reporting Limit	08/03/2015 07:30	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.186	-	-	-	-	-
Lead	0.0500 mg/L	0.960	-	-	-	-	-
Manganese	0.0200 mg/L	32.8 [2]	-	-	-	-	-
Zinc	0.020 mg/L	83.0 [2]	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	2.91 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	40.0	-	-	-	-	-

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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 05-Aug-15
		Received: 05-Aug-15
		Reported: 06-Aug-15 11:20

LAB #	WSI0050-01	-	-	-	-	-	-
SAMPLE ID	006-06-05-15	-	-	-	-	-	-
Reporting Limit	08/05/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0032 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	15.4 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.157	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.20 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.4	-	-	-	-	-

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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 06-Aug-15
		Received: 07-Aug-15
		Reported: 11-Aug-15 10:43

LAB #	WSH0130-01	WSH0130-02	WSH0130-03	WSH0130-04	WSH0130-05	WSH0130-
SAMPLE ID	KT-06-06-15	PTM-06-06-15	OC-06-06-15	CTP06-06-06-15	RB-06-06-15	TB-06-06-
Reporting Limit	06/06/2015 07:30	06/06/2015 08:00	06/06/2015 08:00	06/06/2015 07:00	06/06/2015 08:00	06/06/2015
Metals (Total) (Water)						
Cadmium	0.0100 mg/L	0.198	1.46	1.47	0.0623	<0.0009 [3]
Lead	0.0500 mg/L	0.654	<0.0030 [3]	<0.0000 [3]	0.306	<0.0000 [3]
Manganese	0.0200 mg/L	34.4	0.735	0.744	-	-
Zinc	0.020 mg/L	106 [1]	10.8	10.9	0.814	<0.004 [3]
Classical Chemistry Parameters (Water)						
pH	pH Units	2.96	6.90	6.91	-	-
Total Susp. Solids	5.0 mg/L	26.0	0.6 [2]	0.6 [2]	-	-

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Laboratory Director

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of 3



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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 07-Aug-15
		Received: 07-Aug-15
		Reported: 10-Aug-15 16:45

LAB #	WSI90129-01	-	-	-	-	-	-
SAMPLE ID	006-06-07-15	-	-	-	-	-	-
Reporting Limit	08/07/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0035 [1]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [3]	-	-	-	-	-
Manganese	0.0200 mg/L	0.07 [2]	-	-	-	-	-
Zinc	0.020 mg/L	0.178	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.25	-	-	-	-	-
Total Susp. Solids	mg/L	5.0	1.4	-	-	-	-

Kirby Gray
Technical Director

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Ferguson Contracting
901 N. Division
Pinehurst, ID 83850

Project: BHCTP

Sampled: 10-Aug-15

Received: 10-Aug-15

Reported: 11-Aug-15 15:44

LAB #	WSI#0177-01	-	-	-	-	-	-
SAMPLE ID	KT-08-10-15	-	-	-	-	-	-
Reporting Unit	08/10/2015 07:30	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0864	-	-	-	-	-
Lead	0.0500 mg/L	0.522	-	-	-	-	-
Manganese	0.0200 mg/L	81.5 [2]	-	-	-	-	-
Zinc	0.020 mg/L	50.2 [2]	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	3.29 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	85.0	-	-	-	-	-

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of 3



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Ferguson Contracting

901 N. Division

Pinehurst, ID 83850

Project: BHCTP

Sampled: 10-Aug-15

Received: 10-Aug-15

Reported: 11-Aug-15 15:41

LAB #	WSI90176-01	-	-	-	-	-	-
SAMPLE ID	006-06-10-15	-	-	-	-	-	-
Reporting Limit	08/10/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0050 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	18.5 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.195	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.23 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.2	-	-	-	-	-

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Ferguson Contracting
901 N. Division
Pinehurst, ID 83850

Project: BHCTP

Sampled: 12-Aug-15
Received: 12-Aug-15
Reported: 13-Aug-15 14:39

LAB #	WSH03229-01	-	-	-	-	-
SAMPLE ID	006-08-12-15	-	-	-	-	-
	08/12/2015 06:00	-	-	-	-	-
Reporting Limit						
Metals (Total) (Water)						
Cadmium	0.0100 mg/L	0.0037 [2]	-	-	-	-
Lead	0.0500 mg/L	<0.0030 [4]	-	-	-	-
Manganese	0.0200 mg/L	22.6 [3]	-	-	-	-
Zinc	0.020 mg/L	0.184	-	-	-	-
Classical Chemistry Parameters (Water)						
pH	pH Units	7.20 [1]	-	-	-	-
Total Susp. Solids	mg/L	2.0	-	-	-	-

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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 13-Aug-15
		Received: 14-Aug-15
		Reported: 18-Aug-15 10:42

LAB #	WSH0302-01	WSH0302-02	-	-	-	-	-
SAMPLE ID	KT-08-13-15	CTPX6-08-13-15	-	-	-	-	-
Reporting Unit	08/13/2015 07:30	08/13/2015 07:00	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0649	0.0527	-	-	-	-
Lead	0.0500 mg/L	1.25	0.312	-	-	-	-
Manganese	0.0200 mg/L	77.7	-	-	-	-	-
Zinc	0.020 mg/L	47.5	0.813	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	3.41 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	96.0	-	-	-	-	-

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of 3



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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 14-Aug-15
		Received: 14-Aug-15
		Reported: 17-Aug-15 15:51

LAB #	WSH0301-01	WSH0301-02	-	-	-	-
SAMPLE ID	006-08-14-15	OC-08-14-15	-	-	-	-
Reporting Limit	08/14/2015 06:00	08/14/2015 06:00	-	-	-	-
Metals (Total) (Water)						
Cadmium	0.0100 mg/L	0.0048 [2]	0.0050 [2]	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	<0.0010 [4]	-	-	-
Manganese	0.0200 mg/L	23.9 [3]	23.9	-	-	-
Zinc	0.020 mg/L	0.184	0.161	-	-	-
Classical Chemistry Parameters (Water)						
pH	pH Units	7.28 [1]	7.30 [1]	-	-	-
Total Susp. Solids	5.0 mg/L	2.0	1.4	-	-	-

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Ferguson Contracting
901 N. Division
Pinehurst, ID 83850

Project: BHCTP

Sampled: 17-Aug-15

Received: 17-Aug-15

Reported: 18-Aug-15 13:57

LAB #	WSH0335-01	-	-	-	-	-	-
SAMPLE ID	006-06-17-15	-	-	-	-	-	-
Reporting Limit	08/17/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0044 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	28.4 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.190	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.12 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.6 [2]	-	-	-	-	-

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Ferguson Contracting

901 N. Division

Pinehurst, ID 83850

Project: BHCTP

Sampled: 17-Aug-15

Received: 17-Aug-15

Reported: 24-Aug-15 09:35

LAB #	WSI0336-01	-	-	-	-	-	-
SAMPLE ID	KT-08-17-15	-	-	-	-	-	-
Reporting Unit	08/17/2015 07:30	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0797	-	-	-	-	-
Lead	0.0500 mg/L	0.569	-	-	-	-	-
Manganese	0.0200 mg/L	77.2 [1]	-	-	-	-	-
Zinc	0.020 mg/L	46.1 [1]	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	3.34 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	74.0	-	-	-	-	-

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Ferguson Contracting
901 N. Division
Pinehurst, ID 83850

Project: BHCTP

Sampled: 19-Aug-15

Received: 19-Aug-15

Reported: 20-Aug-15 13:48

LAB #	WSH0380-01	-	-	-	-	-	-
SAMPLE ID	006-08-19-15	-	-	-	-	-	-
Reporting Limit	08/19/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0038 [2]	-	-	-	-	-
Lead	0.0500 mg/L	0.0045 [2]	-	-	-	-	-
Manganese	0.0200 mg/L	26.5 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.195	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.15 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.8 [2] [4]	-	-	-	-	-

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of 3



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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 20-Aug-15
		Received: 21-Aug-15
		Reported: 24-Aug-15 14:15

LAB #	WSH0465-01	WSH0465-02	WSH0465-03	-	-	-
SAMPLE ID	KT-08-20-15	PTM-08-20-15	CTPKK-08-20-15	-	-	-
Reporting Limit	08/20/2015 07:30	08/20/2015 08:00	08/20/2015 07:00	-	-	-
Metals (Total) (Water)						
Cadmium	0.0100 mg/L	0.193	1.41	0.0526	-	-
Lead	0.0500 mg/L	0.772	<0.0030 [3]	0.318	-	-
Manganese	0.0200 mg/L	34.9	-	-	-	-
Zinc	0.020 mg/L	88.5	10.6	0.821	-	-
Classical Chemistry Parameters (Water)						
pH	pH Units	2.95 [1]	6.50 [1]	-	-	-
Total Susp. Solids	5.0 mg/L	14.0	0.4 [2]	-	-	-

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of 3



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Ferguson Contracting

901 N. Division

Pinehurst, ID 83850

Project: BHCTP

Sampled: 21-Aug-15

Received: 21-Aug-15

Reported: 24-Aug-15 14:26

LAB #	WSI90464-01	-	-	-	-	-	-
SAMPLE ID	006-08-21-15	-	-	-	-	-	-
Reporting Limit	08/21/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0041 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	16.5 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.204	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.27 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.4	-	-	-	-	-

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of 3



One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0

Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 24-Aug-15
		Received: 24-Aug-15
		Reported: 25-Aug-15 14:34

LAB #	WSI0490-01	-	-	-	-	-	-
SAMPLE ID	006-06-24-15	-	-	-	-	-	-
		06/24/2015 06:00	-	-	-	-	-
		Reporting Limit	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0039 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	11.5 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.183	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.27 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.2	-	-	-	-	-

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of 3



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Ferguson Contracting

901 N. Division

Pinehurst, ID 83850

Project: BHCTP

Sampled: 24-Aug-15

Received: 24-Aug-15

Reported: 26-Aug-15 11:13

LAB #	WSI0491-01	-	-	-	-	-	-
SAMPLE ID	KT-08-24-15	-	-	-	-	-	-
Reporting Limit	08/24/2015 07:30	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.179	-	-	-	-	-
Lead	0.0500 mg/L	0.623	-	-	-	-	-
Manganese	0.0200 mg/L	33.0 [2]	-	-	-	-	-
Zinc	0.020 mg/L	83.6 [2]	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	2.88 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	37.0	-	-	-	-	-

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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 26-Aug-15
		Received: 26-Aug-15
		Reported: 27-Aug-15 14:07

LAB #	WSH0529-01	-	-	-	-	-
SAMPLE ID	006-08-26-15	-	-	-	-	-
	08/16/2015 06:00	-	-	-	-	-
Reporting Limit						
Metals (Total) (Water)						
Cadmium	0.0100 mg/L	0.0048 [2]	-	-	-	-
Lead	0.0500 mg/L	<0.0030 [4]	-	-	-	-
Manganese	0.0200 mg/L	10.9 [3]	-	-	-	-
Zinc	0.020 mg/L	0.233	-	-	-	-
Classical Chemistry Parameters (Water)						
pH	pH Units	7.23 [1]	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.2	-	-	-	-

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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 27-Aug-15
		Received: 28-Aug-15
		Reported: 04-Sep-15 13:53

LAB #	WSH0600-01	WSH0600-02	WSH0600-03	-	-	-
SAMPLE ID	KT-08-27-15	OC-08-27-15	CTPKK-08-27-15	-	-	-
Reporting Limit	08/27/2015 06:30	08/27/2015 08:30	08/27/2015 07:00	-	-	-
Metals (Total) (Water)						
Cadmium	0.0100 mg/L	0.0799	0.0792	0.0524	-	-
Lead	0.0500 mg/L	0.598	0.592	0.321	-	-
Manganese	0.0200 mg/L	80.1	79.7	-	-	-
Zinc	0.020 mg/L	45.9	45.5	0.787	-	-
Classical Chemistry Parameters (Water)						
pH	pH Units	3.33 [1]	3.31 [1]	-	-	-
Total Susp. Solids	5.0 mg/L	85.0	83.0	-	-	-

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of 3



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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 28-Aug-15
		Received: 28-Aug-15
		Reported: 31-Aug-15 15:35

LAB #	WSH0599-01	-	-	-	-	-	-
SAMPLE ID	006-08-28-15	-	-	-	-	-	-
Reporting Limit	08/28/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0041 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	20.2 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.205	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.26 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.2	-	-	-	-	-

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of 3



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Ferguson Contracting

901 N. Division

Pinehurst, ID 83850

Project: BHCTP

Sampled: 31-Aug-15

Received: 31-Aug-15

Reported: 01-Sep-15 12:07

LAB #	WSI0630-01	-	-	-	-	-	-
SAMPLE ID	006-08-31-15	-	-	-	-	-	-
Reporting Limit	08/31/2015 06:00	-	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0040 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0000 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	25.9 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.197	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	7.39 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.8	-	-	-	-	-

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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 31-Aug-15
		Received: 31-Aug-15
		Reported: 04-Sep-15 13:54

LAB #	WSI0631-01	-	-	-	-	-	-
SAMPLE ID	KT-08-31-15	-	-	-	-	-	-
		08/31/2015 07:30	-	-	-	-	-
		Reporting Limit	-	-	-	-	-
Metals (Total) (Water)							
Cadmium	0.0100 mg/L	0.0775	-	-	-	-	-
Lead	0.0500 mg/L	0.630	-	-	-	-	-
Manganese	0.0200 mg/L	80.9 [1]	-	-	-	-	-
Zinc	0.020 mg/L	45.5 [1]	-	-	-	-	-
Classical Chemistry Parameters (Water)							
pH	pH Units	3.43 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	78.0	-	-	-	-	-

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of 3